

Dr Halbeisen*

MODULES 110PMA003 & 110PMA107

Department of Pure Mathematics

Week 8, 2001

The pdf-file you may download from

<http://www.math.berkeley.edu/~halbeis/4students/zero.html>

Please hand in your solutions (stapled together with your full name on the first page) at the lecture on Thursday, 22 November 2001.

34. Find the inverse of each of the following functions and sketch their graphs:

(a) $f(x) = x + 5$ (b) $f(x) = \frac{x}{2}$ (c) $f(x) = 2x - 3$ (d) $f(x) = x^3$

35. Given the functions $f(x) = e^{2x}$, $g(x) = \ln(2x + 1)$ and $h(x) = \sqrt{x^3 - 8}$.

(a) Find the domain of each of these three functions.

(b) Find the inverse of each of these three functions.

(c) Find the domain of each of these three inverse functions.

36. Solve the following equations:

(a) $3\ln(x) = \ln(x^2) + \ln(4)$ (b) $e^{\ln(2)+\ln(x)} = 2$

37. Find all solutions of the following equations:

(a) $\sqrt[4]{4^x} = 64$ (b) $3^{(x^2-3)} = 27^{(x-1)}$

(c) $2^{x-3}5^{x+1} = 625$ (d) $10^{2x} - 11 \cdot 10^x + 10 = 0$

The examination in January 2002 will comprise of two sections (Section A and Section B) and each of them has 5 questions. You have to answer **all** questions in Section A and two or three questions in Section B, depending in which level (0 or 1) you are. Section A carries 50% or 40% (again depending on the level) of the total marks.

An information sheet with formulas will be provided.

*David Bates Building, Room 1014.

Office hours (Room 1007): Monday 1 pm–2 pm, Wednesday 2 pm–3 pm